

عنوان مقاله:

The Crucial Interplay of Seas, Marine Industries, and Artificial Intelligence in Sustainable Development

محل انتشار:

هشتمین همایش بین المللی توسعه فناوری در نفت، گاز، پالایش و پتروشیمی (سال: 1403)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:

This article explores the symbiotic relationship between seas, marine industries, and artificial intelligence (AI) in the context of sustainable development. Recognizing the vital role of oceans in global well-being, it delves into the economic significance of marine industries while emphasizing the need for sustainable practices. The article highlights the transformative impact of AI in optimizing navigation, promoting sustainable fishing practices, and enhancing renewable energy initiatives in the maritime domain. It addresses the challenges and ethical considerations associated with AI implementation in marine industries. The overarching theme emphasizes responsible practices, technological innovation, and international cooperation as essential elements in navigating toward a future where seas and AI harmoniously contribute to sustainable development. The integration of artificial intelligence (AI) in the marine industry brings forth a transformative approach to various facets of Marine activities. This innovation spans from optimizing navigation and traffic management to ensuring sustainability and safety. Key applications include autonomous navigation utilizing reinforcement learning, predictive maintenance for vessels through machine learning, and the implementation of multi-agent systems for Marine traffic management. Other areas of impact include environmental monitoring and compliance using neural networks, intelligent port operations employing genetic algorithms, and smart aquaculture practices with IoT sensors and machine learning. Furthermore, AI contributes to ocean exploration and resource mapping through simultaneous localization and mapping (SLAM) algorithms, enhances weather forecasting for Marine operations using ensemble learning, and promotes crew safety through computer vision and biometric analysis. Supply chain optimization is also addressed with genetic algorithms and simulated annealing. These AI applications collectively lead to advantages such as increased efficiency, accuracy, and 24/7 availability. They contribute to cost savings, personalized customer experiences, and predictive analytics. In the marine industry, these technologies are employed in real projects like the Smart Marine Traffic Management System, showcasing how AI enhances safety, efficiency, and sustainability by implementing autonomous vessel guidance, collision avoidance, real-time monitoring, weather-informed navigation, and dynamic risk assessment. Ultimately, these advancements position AI as a driving force ... behind innovative solutions that propel the marine industry towards a future

کلمات کلیدی:

.Marine Industries, Artificial Intelligence, Sustainable Development, Optimizing Navigation, Oceans and Seas

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